

REMARKS

The Office Action dated 4/7/03 has been fully considered by the Applicant.

The rejection of claims 8 and 12 under 36 USC 103(a) as unpatentable over Patel et al (US Patent No. 6,290,864 B1) in view of Cannella (US Patent No. 4,889,609) and McQuarrie et al (JP 10-317169 A) and the rejection of claim 11 under 35 USC 103(a) as unpatentable over Patel et al in view of Sinha et al (US Patent No. 6,123,765) is respectfully traversed.

Applicant encloses herewith a fully executed Declaration Under 37 CFR 1.131 attesting to the fact that the Applicant, Dong-il Cho, made the invention disclosed in the present application prior to October 26, 1999, the filing date of the Patel et al US Patent No. 6,290,864. Also enclosed is a certified copy of Applicant's Korean Patent Application No. 10-1999-0001002 showing a filing date of January 15, 1999. The Korean Patent Application describes the present invention. Applicant is entitled to show completion of his invention at least back to July 12, 1999. Applicant hereby requests that the Examiner's rejection of claims 8, 9 and 11-13 be reconsidered.

Moreover Applicant's invention is directed toward solving the problem of the formation of HF (hydrofluoric acid) which occurs with the use of XeF_2 for etching. The patents to Cannella (US No. 4,889,609) and Patel et al (US No. 6,290,864 B1) and McQuarrie et al (JP 10-317169 A) do not teach a solution toward this particular problem, since they do not even recognize the formation of HF as being a problem.

Moreover, Applicant's invention includes the step of controlling the internal pressure of the loading chamber at a level between sublimation pressure of XeF_2 and atmospheric pressure to prevent sublimation of the residual XeF_2 in the loading chamber after etching a silicon wafer using the etching apparatus of the present invention. The control of pressure between the sublimation pressure and the atmospheric pressure is not disclosed in any of the cited references.

The rejection of claims 8, 9 and 11-13 under 35 USC 103(a) as unpatentable over McQuarrie et al in view of Cannella and in further view of Sinha is respectfully traversed.

Cannella (U.S. Patent No. 4,889,609) discloses a continuous etching apparatus comprising a transmittance means for the substrate to be etched. The invention of Cannella, therefore, is different from the present invention regarding formation of HF. It is apparent that Cannella does not recognize the problem of HF formation since Cannella discloses an etching process using plasma (thus, the etching chamber according to Cannella would necessarily include electrodes).

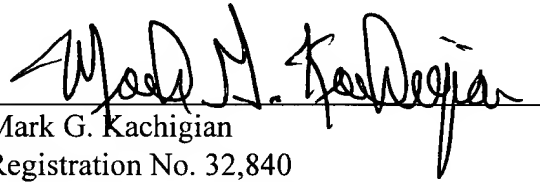
While the process of injection of inert gas before etching is described in Cannella, this process is to prevent disassociated active species in the etching chamber from entering a substrate loading chamber or substrate unloading chamber, or to eliminate the ambient atmosphere in order to prevent a contamination of the etching chamber. Therefore, Cannella's process is a method for elimination in order to prevent contamination during transmitting of the substrate, which is different from the step of elimination of moisture as claimed in the present invention. As clearly set forth in the claims, the moisture is eliminated and, thus, formation of HF is prevented. By elimination of moisture, the selectivity of silicone in the silicon oxide layer is raised to 1:2000 or more, and the damage of shape protection layer diminishes. Further, Cannella discloses using AR as an inert gas. Considering that the inert gas generally refers to zero (0) group elements such as NE, AR, etc., Cannella differs from the present invention wherein nitrogen (N_2) is used.

For all the foregoing reasons, the rejection of Claims 8, 9 and 11 through 13 as unpatentable over McQuarrie et al. in view of Cannella and further in view of Sinha is respectfully traversed.

It is believed that the application is in condition for allowance and such action is earnestly solicited. If any further issues remain, a telephone conference with the Examiner is requested.

HEAD, JOHNSON & KACHIGIAN

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark G. Kachigian', written over a horizontal line.

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